Economics of Heavy Turkey Production in Alberta

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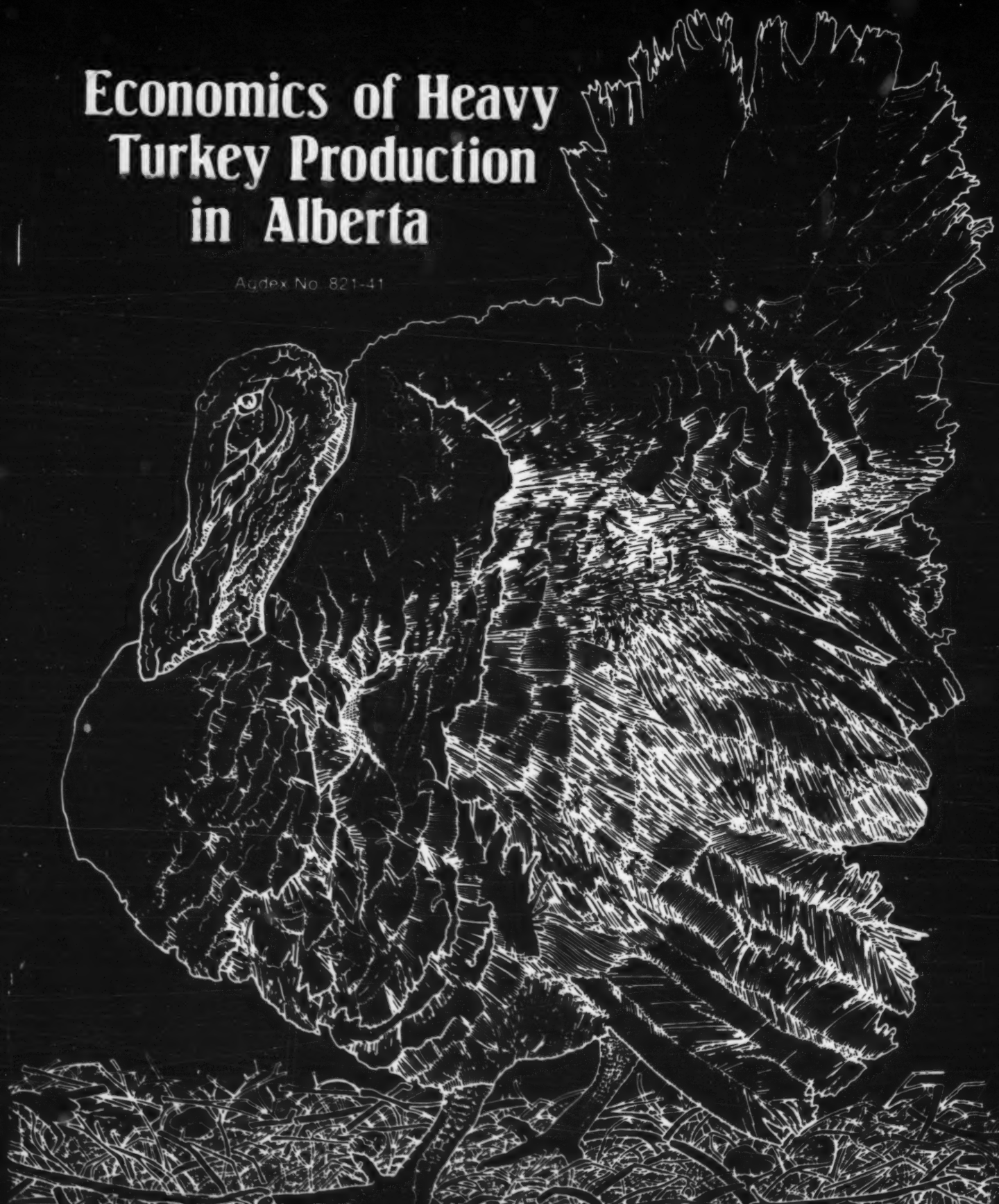

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ECONOMICS OF

HEAVY TURKEY PRODUCTION

IN ALBERTA

BY

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ACKNOWLEDGEMENT

This report was prepared from farm records of a selected number of turkey producers in Alberta who voluntarily participated in the project.

Appreciation goes to each participating producer for his time and effort in providing the data.

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I. INTRODUCTION

The supply management nature of the turkey raising industry in Canada makes the cost analysis an integrated part of the price setting mechanism. The Canadian Turkey Marketing Agency is the national body that is responsible for establishing national and provincial quotas. The provincial boards are primarily responsible for quota allocation within the province, as well as establishing an equitable price.

In 1983 the Production and Resource Economics Branch, along with the Alberta Turkey Growers' Marketing Board, initiated a three year study of cost analysis of turkey production in Alberta.

The results of the analysis of 1983 data were published in 1985. This report consists of 1984 and 1985 survey summaries. Two production enterprises are recognized; heavy and light turkey production. The sample of light breed is too small to show any meaningful averages and was therefore deleted from this report.

The analysis of turkey production costs and returns show the economic well being of the industry. Such findings can assist the Board with dealings at the national level. At the same time, it enables individual producers to compare their farm summaries for efficiency and profitability with the group average.

Specific objectives of the study are as follows:

- to provide an account of economic conditions, relative productivity and profitability of heavy turkey production in Alberta.
- to determine various management indicators and input prices for turkey farming.
- to provide participating producers with an annual summary of their heavy breed enterprise which can assist them in management decisions.
- to provide a source of technical and financial data for Alberta Agriculture field staff for use in extension work.

II. METHOD OF ANALYSIS

To analyze the profitability of farm enterprise for a specific production period (12 months) financial information on income and expenses was needed. This information was obtained from actual farm records of a selected sample of heavy turkey producers.

The economic well being of a farm enterprise was measured by the return to equity invested in the enterprise. The central objective was then to determine the per cent return to equity.

Production costs are separated into variable and capital or fixed costs categories. By definition, variable costs change as the level of output changes. The variable costs include such items as feed, labour, medication and other operating expenses. Although the value of family labour is imputed, it is a real expense and is therefore included in the cost of production. Capital costs represent the cost of resource ownership. The charges for rent are included in the cost of capital. If resources are rented, there is a charge for their use; on the other hand, if resources are owned, the owner must bear the cost of depreciation and interest on debt.

The cost summaries in this report are based on enterprise analysis. Namely, the expenses and income associated with a given enterprise are allocated from the total farm activities. Producers generally handle several enterprises on the same farm, therefore, allocating the appropriate outlays for each enterprise is not easy. Expenses such as utilities, fuel, etc., are purchased on a total farm basis and require a proper allocation for different uses. In some cases, the operator raises his own feed; the inputs of production are allocated to the turkey enterprise and the total farm according to the actual use. Consequently, the final costs of producing turkeys are the true costs associated only with that enterprise.

III. DATA COLLECTION

Information from actual farm records was compiled by a series of personal interviews with the participating producers. All producers on the study were required to complete a detailed input form to report their turkey production income and expenses, as well as investment statement.

Although the number of turkey producers in Alberta is quite small, it is not necessary to study the cost of every producer. The 1984 analysis was based on cost analysis of eight producers, while the 1985 study included 10 producers. Nevertheless, a larger sample would provide a better representation.

The study was designed to represent a cross-section of the producers by size of market allocation. The sample was selected from the total population of turkey producers. The average enterprise size in terms of number of birds sold was 33,403 in 1984 and 22,146 in 1985.

IV. ANALYSIS OF RESULTS

The final summaries of the cost and income analysis are shown in Tables 1 and 2. The provincial averages of 10 producers in 1985 and eight producers in 1984 are shown on a per bird and per kilogram basis. This information was adopted for the specific use of the enterprise cost of production and should not in any way be construed as income tax data or actual cash flow on a farm.

Income

The gross income for heavy breed turkey enterprises consisted of sale of birds reported through the marketing board plus any private sales and other receipts pertaining to the turkey enterprise.

The 1984 sample average indicates 33,403 birds sold for the average price of $1.51 per kg. In the 1985 sample, the farm size of 22,146 birds was much smaller compared to the previous year. The 1985 blend price received for both grades per kg was $1.52. The average weight of 9.05 kg in the 1984 group was higher than the 8.63 kg in 1985. This was caused by proportionally more hens than toms being sold in the 1985 sample.

The average grade A utilization was 76.4 per cent and 75.0 per cent in 1985 and 1984 respectively.

Poult Cost

The cost of poults is the second most important cost item. It accounted for 10.3 per cent of total cost in 1985 and 11.7 per cent in 1984. The average price paid for toms was $1.31 in 1984 and $1.65 in 1985, while hens were valued at $1.27 and $1.44 for the same period. The purchase of poults is determined by the quota size of each operation. In the 1985 sample, the average number of flocks was 2.5, while the 1984 average was 4.25. The market weight for toms was reached in 137 days and for hens in 121 days. The number of days to market was very similar in 1984 and 1985.

TABLE 1

ENTERPRISE RESEARCH PROJECT 1984 — PROVINCIAL AVERAGE

HEAVY TURKEY COSTS AND RETURNS

			TOTAL	DOLLARS PER BIRD	CENTS PER KG.
BIRD SALES	33403.00	BIRDS			
HENS			221981.62	6.65	73.44
TOMS			230318.00	6.90	76.19
PRIVATE SALES & OTHER RECEIPTS			2651.96	0.08	0.88
INVENTORY ADJUSTMENT					
A. GROSS INCOME			454951.62	13.62	150.51
POULT COSTS - HENS	1.27	$/POULT	26450.43	0.79	8.75
- TOMS	1.31	$/POULT	21015.19	0.63	6.95
FEED COSTS - HENS	282.05	$/TONNE	165344.75	4.95	54.70
- TOMS	280.25	$/TONNE	96527.25	2.89	31.93
MEDICATION			2271.39	0.07	0.75
BARN SUPPLIES			4009.87	0.12	1.33
MARKETING FEES & FREIGHT			9726.87	0.29	3.22
FUEL, OIL, LUBE			1596.25	0.05	0.53
UTILITIES			12596.55	0.38	4.17
MACHINERY & BUILDING REPAIRS			6834.94	0.20	2.26
OPERATING INTEREST			4471.51	0.13	1.48
OTHER EXPENSES			6836.86	0.20	2.26
HIRED LABOUR	2630.40	HOURS	21435.29	0.64	7.09
FAMILY LABOUR	965.00	HOURS	6276.25	0.19	2.08
LABOUR COSTS	7.71	$/HOUR	27711.54	0.83	9.17
B. TOTAL VARIABLE COSTS			385393.12	11.54	127.50
INSURANCE AND TAXES			3905.52	0.12	1.29
RENT			52.50	0.00	0.02
DEPRECIATION			15317.77	0.46	5.07
INTEREST (CAPITAL LOANS)	11.10	%	1366.43	0.04	0.45
C. TOTAL CAPITAL COSTS			20642.21	0.62	6.83
D. PRODUCTION COSTS (B+C)			406035.37	12.16	134.32
GROSS MARGIN (A-B)			69558.31	2.08	23.01
RETURN TO EQUITY (A-D)	22.24	%	48916.16	1.46	16.18
INVESTMENT:					
BUILDINGS	12.58	YEARS	180083.75	5.39	59.58
MACHINERY	6.46	YEARS	35879.73	1.07	11.87
LAND & SUPPLIES			16276.37	0.49	5.38
TOTAL INVESTMENT			232239.75	6.95	76.83
EQUITY	94.70	%	219932.25	6.58	72.76

MANAGEMENT:		
YEARS OF TRKY FARMING	12.00	
NUMBER OF FLOCKS	4.25	
TOTAL KG SOLD	302280.25	
GRADE A UTILIZATION	74.99	%
ANNUAL PRODUCTIVITY	33403.00	BIRDS
HOURS PER BIRD	0.11	
FEED CONVERSION FACTOR	3.12	
INVESTMENT PER BIRD	7.58	
MORTALITY ESTIMATE	10.14	%
PERCENTAGE CONDEMNED	1.73	%
DAYS TO MARKET - HENS	117.29	
- TOMS	136.52	

TABLE 2

ENTERPRISE RESEARCH PROJECT 1985 — PROVINCIAL AVERAGE

HEAVY TURKEY COSTS AND RETURNS

			TOTAL	DOLLARS PER BIRD	CENTS PER KG.
BIRD SALES	22145.70	BIRDS			
HENS			194410.87	8.78	101.67
TOMS			94951.37	4.29	49.66
PRIVATE SALES & OTHER RECEIPTS			1955.40	0.09	1.02
INVENTORY ADJUSTMENT					
A. GROSS INCOME			291317.69	13.15	152.35
POULT COSTS - HENS	1.44	$/POULT	18734.10	0.85	9.80
- TOMS	1.65	$/POULT	7684.10	0.35	4.02
FEED COSTS - HENS	265.43	$/TONNE	111064.56	5.02	58.08
- TOMS	274.43	$/TONNE	41879.22	1.89	21.90
MEDICATION			1503.40	0.07	0.79
BARN SUPPLIES			1539.90	0.07	0.81
MARKETING FEES & FREIGHT			5694.90	0.26	2.98
FUEL, OIL, LUBE			2614.50	0.12	1.37
UTILITIES			7960.20	0.36	4.16
MACHINERY & BUILDING REPAIRS			6366.40	0.29	3.33
OPERATING INTEREST			6033.30	0.27	3.16
OTHER EXPENSES			4726.40	0.21	2.47
HIRED LABOUR	1132.90	HOURS	10349.50	0.47	5.41
FAMILY LABOUR	1504.90	HOURS	8844.90	0.40	4.63
LABOUR COSTS	7.28	$/HOUR	19194.40	0.87	10.04
B. TOTAL VARIABLE COSTS			234995.19	10.61	122.89
INSURANCE AND TAXES			2968.40	0.13	1.55
RENT			290.00	0.01	0.15
DEPRECIATION			14529.79	0.66	7.60
INTEREST (CAPITAL LOANS)	7.82	%	2955.60	0.13	1.55
C. TOTAL CAPITAL COSTS			20743.79	0.94	10.85
D. PRODUCTION COSTS (B+C)			255739.00	11.55	133.74
GROSS MARGIN (A-B)			56322.23	2.54	29.45
RETURN TO EQUITY (A-D)	23.43	%	35578.45	1.61	18.61
INVESTMENT:					
BUILDINGS	14.05	YEARS	143015.75	6.46	74.79
MACHINERY	11.17	YEARS	39332.27	1.78	20.57
LAND & SUPPLIES			7297.00	0.33	3.82
TOTAL INVESTMENT			189644.87	8.56	99.18
EQUITY	80.08	%	151865.06	6.86	79.42

MANAGEMENT:

YEARS OF TRKY FARMING	13.00	
NUMBER OF FLOCKS	2.50	
TOTAL KG SOLD	191218.00	
GRADE A UTILIZATION	76.36	%
ANNUAL PRODUCTIVITY	22145.70	BIRDS
HOURS PER BIRD	0.12	
FEED CONVERSION FACTOR	2.89	
INVESTMENT PER BIRD	18.37	
MORTALITY ESTIMATE	10.10	%
PERCENTAGE CONDEMNED	1.47	%
DAYS TO MARKET - HENS	121.02	
- TOMS	136.90	

Feed Costs

Feed cost of turkey production is the single most significant cost item. Expenses for feed accounted for 60 per cent of production costs in 1985 and 64.5 per cent in 1984.

The feed cost reflected the cost of all the feed actually used in turkey feeding. Home grown grain was valued at market price, while the actual purchase price was applied to purchased feed.

Average feed conversion, or feed used per kilogram of live weight sold was 2.89 kg in 1985 and 3.12 in the 1984 sample group. The average price per tonne of feed was $267.8 in 1985, down from $281.4 in 1984.

The total feed cost per bird amounted to $6.91 and $7.84 in 1984 and 1985 respectively.

Labour Costs

Establishing the value for labour in a farm operation is not an easy task. Two obstacles have to be resolved, ramely, the allocation of working time for the turkey enterprise and the value for unpaid family labour. This is especially important when other enterprises are present on the same farm and when family labour is used to a large extent.

Labour hours involved in the turkey operation were recorded for operator, family, and hired labour. The hired wage rate was the actual wage paid. The operator wage rate was estimated at $7.00 per hour, while family labour rates varied depending on the type of work performed and age. The objective was to determine the labour cost in agriculture, and not in other alternative opportunities. The measurement of the operator's management abilities is the bottom line return.

The average turkey enterprise in 1985 and 1984 required 119 and 108 hours respectively per 1,000 birds. The total labour cost amounted to 10¢ and 9.2¢ per kilogram for the respective years, which was approximately 7.5 and 6.8 per cent of total production cost.

Other Cash Costs

Expenses for medication, barn supplies, energy, machinery and building repairs, freight, interest on operating loans and other cash outlays are summarized in this category. The value of these items is determined from actual payments made by the operators during the year and appropriately allocated to the turkey enterprise. In total, these expenses accounted for 19¢ in 1985 and 16¢ in 1984 per kilogram sold. The most significant expense in this group was energy, at 5.5¢, followed by machinery and building repairs, at 3.33¢ in 1985. The respective values in 1984 were 4.7¢ and 2.26¢ per kilogram sold.

The other cash costs, in total, accounted for 14.2 per cent of the total cost in 1985 and 12.0 per cent in 1984.

Capital Costs

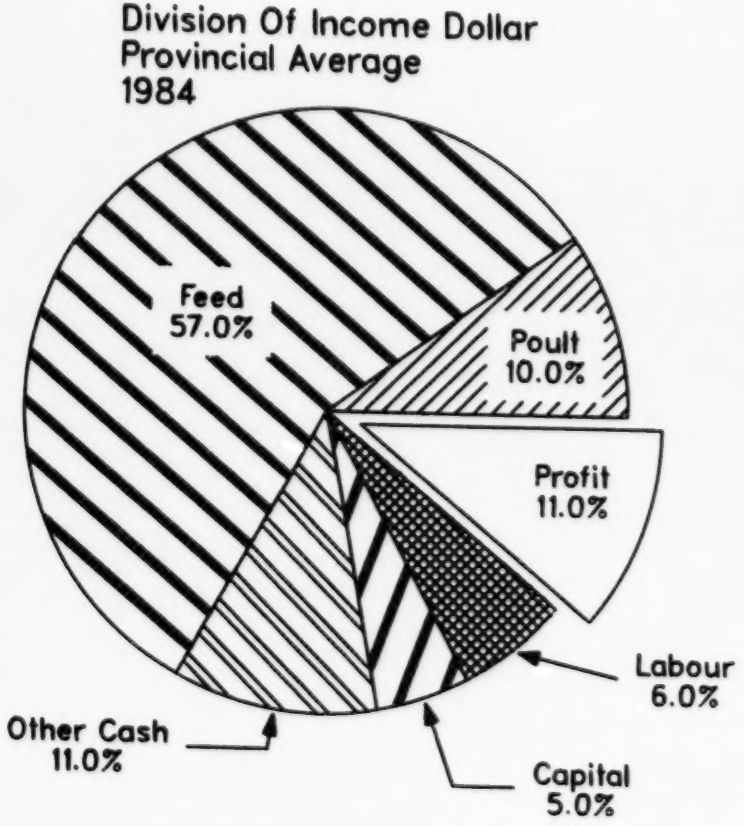
The cost of capital is defined by expenses associated with resource ownership. Rent is included in this group because it is a form of payment for capital. Depreciation, interest on capital loans, and insurance and taxes are other items also included in this category.

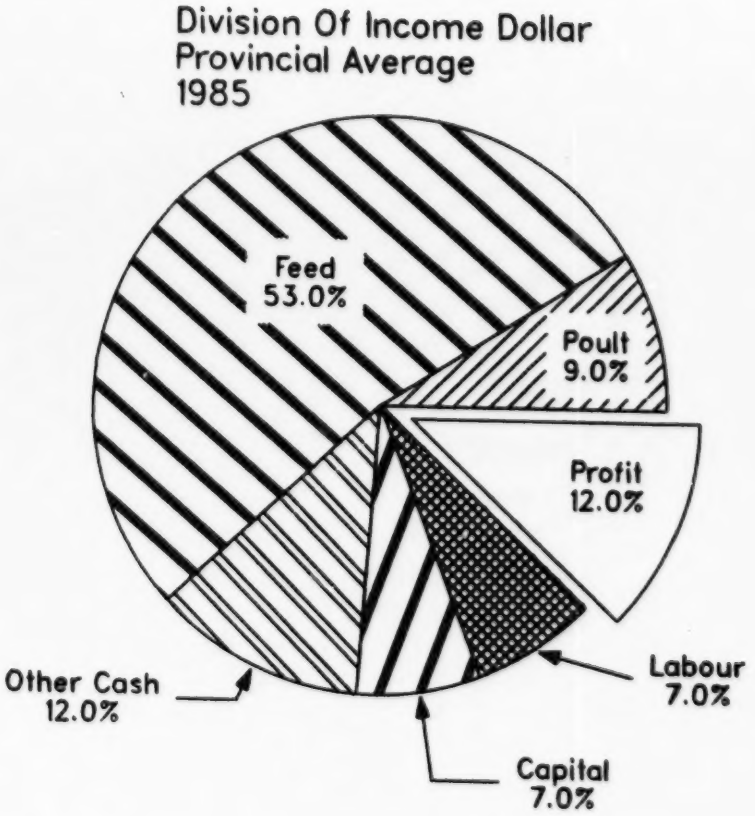
Depreciation was calculated using original, or purchase cost, and the straight line method was applied, with depreciation rates of 10 per cent for machinery and five per cent for buildings. The capital cost accounted for 8.1 and 5.1 per cent of total cost in 1985 and 1984 respectively. This represents a cost of 10.85¢ per kilogram in 1985 and 6.8¢ in 1984.

It is important to keep down the proportion of capital cost to total cost because these expenses must be paid regardless of whether anything is produced or not.

In order to determine the current value of investment, the original value was updated by inflation of the respective categories. The age was taken into consideration for final current value. The estimated current value of turkey operations in 1985 was $8.56 per bird; the 1984 figure was $6.95. The investment in buildings was most significant, accounting for roughly 75 per cent of total investment on turkey farms. The indebtedness on turkey farms was very low in both years.

Heavy Turkey Production





Returns

The economic well being of the farm enterprise is measured by the bottom line return. In this particular case, it is return to equity or invested portion of the assets.

After all expenses are subtracted from the gross income, a return of 18.6¢ in 1985 and 16.2¢ in 1984 per kilogram sold remained. This represents 23.4 per cent and 22.2 per cent return of invested equity for the respective years.

TABLE 3

RETURN TO CAPITAL

	Per Bird	
	1984	1985
Total Investment ($)	6.95	8.56
Debt ($)	0.37	1.70
Equity ($)	6.58	6.86
Interest on Debt (%)	11.1	7.8
Interest on Equity (%)	22.2	23.4
Profit Per Cent of Sales	10.7	12.1

Considering the alternative return to investment certificates or government bonds, the 1984 and 1985 returns on heavy turkey farms was very attractive.

The maximum amount of debt which the turkey farm can repay depends on the level of gross margin, ie. money available to cover depreciation, interest, rent and profit. When the interest rates rise and when repayment periods are reduced, the debt load must be reduced.

It should be emphasized that the capacity to borrow in this particular case is based on one year performance. This, of course, can change from year to year.

The annual earnings available for debt servicing in the 1985 sample amounted to $2.42 per bird, and in 1984 to $1.96 per bird. The following table is based on these annual returns repayed for 15 years at various interest rates.

TABLE 4

ACCEPTABLE TOTAL DEBT LOAD PER BIRD

Interest (%)	1984	1985
10	14.91	18.41
11	14.09	17.40
12	13.35	16.48
13	12.67	15.64
14	12.04	14.86
15	11.46	14.15

Management

Management is concerned with the organization, planning, directing and supervising of the farm. Every farm operator tries to make management decisions that maximize the return on his farm. In the following table, we attempted to identify the top management group and compare them with the standard, or average, group.

Five factors were selected to measure the level of management:

1. Grade A utilization
2. Cost per kilogram
3. Return per hour of labour
4. Return per dollar of feed
5. Return per dollar of investment

The grade A per cent is a measure of product quality. The cost per kilogram is a reflection of efficiency and the remaining factors measure the efficiency of labour, capital and feed inputs.

The breakdown was designed to give producers the opportunity to compare their farm performance in each factor. Turkey farms which performed above average in at least three factors were categorized as the top management group.

The findings, as displayed in Table 5 show the magnitude of the difference between the top group and the standard group. The Grade A utilization and the cost of production were better by 6.5 and 9.3 per cent in 1985 top group, while the cost was the same and Grade A utilization was 4.6 per cent higher for the 1984 top group.

TABLE 5

MANAGEMENT GROUPS

	1984		1985	
	Standard	Top	Standard	Top
No. of Birds Sold	33,403	36,280	22,146	23,178
Average Weight (kg)	9.0	9.3	8.6	8.3
Grade A Utilization (%)	75.0	78.5	76.4	81.3
Investment ($/bird)	6.95	6.42	8.56	5.79
	----------cents per kg----------			
Average Price	150.5	153.2	152.3	155.8
Feed Cost	86.6	89.8	80.8	73.0
Poult Cost	15.7	14.9	12.8	11.1
Labour Cost	9.2	8.7	10.0	9.9
Other Costs	16.0	14.8	19.1	18.8
Total Variable	127.5	128.2	122.9	112.8
Capital Cost	6.8	6.0	10.8	8.4
Total Production Cost	134.3	134.2	133.7	121.2
Return to Equity	16.3	19.0	18.6	34.6

V. NATIONAL COMPARISION

The Canadian Turkey Marketing Agency administers the supply management at the national level and provides monthly consolidated costs of production reports. The cost analysis from the CTMA differs in some areas from our provincial concept. Consequently, one must be careful in comparing the results.

The barometer of industry's economic performance in this report is the return to equity. This bottom line dollar value, if expressed in terms of per cent return to invested equity, can be compared to the alternative investment earnings.

The consolidated cost of production prepared by the CTMA includes the opportunity cost of capital in the capital costs category. On the other hand, it excludes depreciation from this category. The cost of energy and cost of labour are included in the fixed costs category, while by definition these are variable expenses. It is also questionable to consider the transportation cost and levies when total cost is termed "farm gate cost". The levies are price deductions rather than cost of production. However, these differences may not influence the bottom line return in any significant degree.